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At the May RAE meeting there will be a drawing for two Alenco HTs. Chances will be sold for \$2.00 each, and there will only be 100 chances per radio.



MAY 1998

President's Corner

Dave Ross, AA3OV

Yesterday was the WPA President's Conference in Butler, where the RAE was honored as the first club to be affiliated with the ARRL in Western PA.

The meetings, if you've ever been to one, can in some ways be a real case of "deja vu". Talking with other Presidents find much of the same story everywhere...lots of members and little involvement, fund raising and risks to hamfests, trying to appeal to everyone's interests, and just general club operating issues.

In many ways the meeting can be a real shot in the arm. This year's meeting brought a young man to the club who had helped organize his Western PA club. All in their teens, and all ambitious, this young man was among the most articulate of the forty or so at the meeting, and he had the glint of excitement in his eye that only a seventeen year-old can have.

But he brought a special message with him, even though he never realized it. As he talked about their activities — piecing together a repeater, stringing wire here and there for field days, and trying their hand in the PA QSO Party, what you saw was a group of amateur's having FUN!

I think those of us there worrying about declining hamfest attendance, threats to commercial tower space, short-handed public service volunteerism, monthly newsletters, and meeting the desires of 200 hams in their membership were all more than a bit jealous. (Maybe even jealous about not being seen again).

I hope all of you are having fun in the hobby. If not, find a mirror, look straight into it, and remind yourself "This is a Hobby!". Relax. Try something different. If you've never tried VHF SSB, maybe this is the time. Try working an easy-satellite. Build a portable antenna. Build a kit. But have fun.

I hope the RAE can help you enjoy the hobby. I realize we can't be everything to everyone, but we do try to catch most of your interests. If not, hey, let us know what's fun for you and maybe we can all join in and have more fun together.

There's a lot of ways to enjoy the hobby. No matter what interests you, remember, relax, enjoy, and share your fun! It's contagious!

Being raffled are an Alenco DJ-S41 and a DJ-S11 (the "41" is a 440 MHz and the "11" is a 2 meter radio).

These are super-compact HTs with folding antennas...they are great to throw in your pocket on shopping trips or Hamfests.

Remember, there will be only 100 chances per radio, so be at the May meeting to make sure you get your name thrown in the hat for the drawing!

Norma Vanderhoff, W3CC

Obtaining a Technician license in March at the Villa Maria test session were Daniel Davidson of Frewsburg, NY, who received the Call Sign KE2DED, and William Sarnec of Erie.

Passing the Novice exam was Winston Bias of Dorset, Ohio.

Two who made General class were Richard Moore KB3CAB of Erie and Alvin Sharp KC8IYG of Dorset, Ohio.

At the April test session, Nicholas Pirco of Olean, NY, passed Technician class and Sean OBoyle KC2CTW of Jamestown, NY passed Advanced class.

The next Villa Maria test session will be held on Saturday, May 2, at 8 AM.

The official Newsletter of the Radio Association of Erie
The RAE is an ARRL Special Service Club

If you change your address for the season or permanently please call 866-3027

MINUTES

RADIO ASSOCIATION OF ERIE
GENERAL MEETING
April 2, 1998

BOARD MEMBERS PRESENT: AA3OV, N3HPR, N3TUE, N3LBI, N3BZL
not present: KB3B, N3FAW, K3LD

The RAE General Meeting was called to order by the President, AA3OV, at 7:30 P.M.

The President asked for a moment of silence in memory of N3EOV's mother who passed away.
Bill Edgar was welcomed to the meeting.

No new calls

No upgrades

Visitors: Liz Edgar

Secretary report: Motion to accept the minutes was made by N3HPR. Second: N3NTJ.

Treasury report: N3TUE read the treasurer's report.

Board meeting: N3HPR reviewed what was discussed at the last meeting. The repeater filter was installed; the Dayton trip was canceled; the 440 frequency was approved. The board also discussed making a donation to the Red Cross, working the WQLN auction and Field Day. The board meeting was followed by a hamfest meeting.

Membership: N3FAW was not present but AA3OV mentioned that the 1998 directory went out to the club membership and thanked Bob for his efforts in putting out a directory that gets better every year.

Public Service: N3WAH was not present. Matt, N3NTJ, presented a donation to the club from the Erie Runners Club for \$100.00. The 1998 Eriesistable marathon will be held on Sept. 13. A motion was made to provide communications at the marathon by N3HPR. Second: N3NTJ.

Repeater: WB3KGT thanked W3ZQS and N3SRD for installing the filter. The filter got rid of the paging interference. The club 440 repeater frequency has been approved. Tony also thanked N3SRD and KE1XR for repairing the battery at the repeater site.

Education: WB3GK was not present. AA3OV wanted to thank Mike for all the work he has put into the classes. He has done a good job.

Hamfest: N3NTJ: A hamfest meeting was held after the March board meeting. Volunteers are needed, particularly in 3 key areas: 1.) Kitchen- several people are needed to help organize this area which is critical to the success of the ham-

Published by the Radio Association of Erie

The Radio Association of Erie is a Non-Profit club serving the tri-state area by providing emergency communications during a civil disaster, as well as providing communication support for public service events. The club meets at 7:00 the first Thursday of every month at the Red Cross Chapter House, 4961 Pittsburgh Avenue, Erie, PA. For membership information contact Bob Schwimmer, N3FAW at 866-3027.

The RAE has a web page at <http://www.erie.net/~n3ntj/rae.html>

This newsletter is edited by Dave Ross, AA3OV. For submissions or questions, contact the editor at (814) 454-5407 evenings or mail your article or ad to Dave Ross, 639 East 29th Street, Erie, PA 16504. Please contribute!

RAE CLASSIFIEDS

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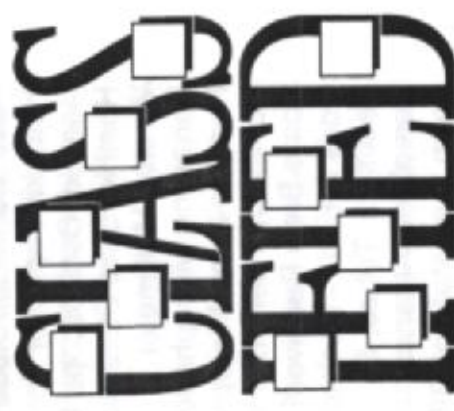
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RAE Hamfest '98 time is fast approaching and the call for volunteers is out. From kitchen to attracting vendors, there are many jobs that need attention. Luckily, we have had a few people volunteer for specific jobs, but there are a lot of areas that still need someone to step forward and accept the call.

The kitchen is a very important part of the hamfest. Hungry hams are grumpy hams. Contented hams who have eaten good food, are happy hams and will enjoy themselves while hunting and pecking for cool stuff and running into old friends. This job takes some hard work, but is pertinent to the success of our event. This job also covers getting local companies and stores to donate food and to determine what we must purchase and from where. It also requires the coordination of duties within the kitchen (getting other people to volunteer time in the kitchen). If we can get a few people to volunteer for this job, it will make it even easier for all.

Another job that requires immediate attention is getting vendors to attend and setting them up once they're here. I would like to get some more computer equipment vendors than we've had in the past, so we can get some computer people here as well. We may lose some vendors to the Wheeling, WV hamfest now that they've moved their date, but we can make up the difference with new vendors. Hopefully we can get some new ham vendors as well.

Prizes will arrive any day now, and flyers are off and running. A tentative flyer is posted on the club web page.

C'mon folks, commit to help your club now. With 200 members, this event should be easier but we need people to take action and volunteer some time. Your club needs you for a successful event. Please help. Please call and email if you can help! My email is:

n3ntj@erie.net.
73 de N3NTJ Matthew Steger
RAE Hamfest '98 Chairman

Contesting

Chris Robson KB3A

Results, Results, Results... I love looking at contest results! One of the best things about contesting is to scan the ham radio publications looking for your call sign in the contest results. I always like to see where I stand and what I want to shoot for the next contest effort in that particular contest. It doesn't bother me too much to see my call at the bottom of the list knowing that the effort I made reflects my score. However I do like to see how I compare with others that worked the contest about as much as I did.

Sometimes I submit a log knowing full well I could only put in a few hours, but it is my way of showing support for the contest. I also like to see how my contesting friends have scored in the contest.

In recent years, most of the regular contesters post their scores on the contest list server 3830@contesting.com. I have subscribed to this server for a couple of years and I can guarantee I get tons of e-mail from this server right after a major con-



test. Some of the contesters just list their score, others share their comments and contests quirk, still others have some truly fascinating stories about their effort and their stations. In this particular list serve, one of the sys ops gathers all the scores listed and posts a claimed score list. It is very informative to see where you stand within days of completing the contest! I remember waiting patiently for Field Day results and Pa QSO Party Results in the past. Now I knew my standing in the Pa QSO Party within 3 weeks after the party due to the claimed score listing on the Internet. The Internet is the best place to get Results for any contest, whether it be a state QSO party or a major DX contest. Also finding info on the latest contests is much easier due to some of the dedicated hams that have setup Web sites just for this purpose. SM3CER Contest Service is the first one that comes to my mind and it can be found at:

<http://www.sk3bg.se/contest/linkcont.htm>

Another great contesting Web site for a wealth of information on contesting and contest results is Contesting Online which can be found at: <http://www.contesting.com/index.html>

May is one of the biggest months for QSO Parties! Look for Connecticut, Massachusetts, Oregon, Nevada, Indiana, and Texas SO Parties in the month of May. Please support their parties because we will need their support for Ours! For the DXer, the CQ WPX DX CW Contest is at the end of May and is the last of the big contests for the contest season.



One last note for those attending the Dayton Hamvention. The contest forum will be held at the Middle School adjacent to Hare arena this year due to the size of the event. If you ever wanted to see how the big gun contesters do it, you have to attend this event.

73 & Good Contesting!



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Cellular Basics

Tom Farley KD6NSP

Cellular Frequencies

Cell phone frequencies start at 824.04 MHz and end at 893.7 MHz. [4] That's 69.66 megahertz worth of radio frequency spectrum, quite a chunk. By comparison, the AM broadcast band takes up only 1.17 megahertz of space. That band, however, provides only 107 frequencies to broadcast on. Cellular may provide thousands of frequencies to

carry conversations and data. This large number of frequencies and the large channel width required for each channel account for the large amount of spectrum used. For example, AT&T's Advanced Mobile Phone Service or

AMPS uses 832 channels that are 30 kHz wide. It's the most common system right now. AMPS, though, has been replaced with NAMPs in crowded cell site areas. NAMPs stands for Narrowband Advanced Mobile

Service. It's a Motorola technology. It produces 2412 narrow channels. A NAMP's channel is 10 kHz wide. AMPS, NAMPs and Hughes' ENAMPs are all FM based, analog systems. Digital systems like CDMA and TDMA provide even more channels in the same space. CDMA, in particular, could provide 20 times the number of frequencies that an AMPS system can. Let's back up a little before we drown in a sea of acronyms.

I mentioned that a typical cell channel is 30 kilohertz wide compared to the ten kHz allowed an AM radio station. How is it possible, you might ask, that a one to three watt cellular phone call can take up a path that is three times wider than a 50,000 watt broadcast station? Well, power does not necessarily relate to

bandwidth. A high powered signal might take up lots of room or a high powered signal might be narrowly focused. A wider channel helps with audio quality. An FM stereo station, for example, uses a 150 kHz channel to provide the best quality sound. A 30 kHz channel for cellular gives you great sound almost automatically, nearly on par with the normal telephone network. That's what's impressive

about Motorola's NAMPs. The base station uses a special frequency control circuit to keeps calls exactly on frequency. No wavering or moving off frequency to destroy a call's quality. Things should sound fine with this narrow band if everything is working right.

I also mentioned that the cellular band runs from 824.04 MHz to 893.97 MHz. In particular, cell phones use the frequencies from 824.04 MHz to 848.97 and the base stations operate on 869.04 MHz to 893.97 MHz. 45 MHz separates each transmit and receive frequency within a cell. That keeps them from interfering with each other. Getting confusing? Let's look at the frequencies of a single cell for a single carrier. Maybe that will clear things up. For this example, let's assume that this is one of 21 cells in an AMPS system:

Cell#1 of 21 in Band A (The nonwireline carrier)

Channel 1 (333) Tx 879.990 Rx 834.990
Channel 2 (312) Tx 879.360 Rx 834.360
Channel 3 (291) Tx 878.730 Rx 833.730
Channel 4 (270) Tx 878.100 Rx 833.100
Channel 5 (249) Tx 877.470 Rx 832.470
Channel 6 (228) Tx 876.840 Rx 831.840



Channel 7 (207) Tx 876.210 Rx 831.210
Channel 8 (186) Tx 875.580 Rx 830.580 etc., etc.,

(Each cell has at least 15 frequencies or channels)

The cellular network assigns these frequency pairs carefully and in advance. The layout is confusing since the pattern is non-intuitive and because there are so many numbers involved. Don't get too caught up with exact frequency assignments unless you want to go further. [5] Speaking of numbers, check out the sidebar. Channels 800 to 832 are not labeled as such. Cell channels go up to 799 in AMPS and then stop. Believe it or not, the numbering begins again at 991 and then goes up to 1023. That gives us 832. Why offset at all? Cellular is not like CB radio. Citizen's band uses the same frequency to transmit and receive. A push to talk setup. cellular provides full duplex communication like nearly all modern radios. It's more expensive since the mobile unit and the base station need the circuitry to transmit on one frequency while receiving on another. But it's the only way that permits a normal, back and forth, talk when you want to, conversation.

Channel Names and Functions

Okay, so what do we do we have? Three things:

1) Cell phones transmit on certain, dedicated frequencies, 2) base stations transmit on certain, dedicated frequencies and 3) a certain amount of bandwidth separates these frequencies. Let's get even more specific. We call a cell site's transmitting frequency the forward channel. A forward channel contains everything you hear since it is the cell site that transmits it. The cell phone's transmitting frequency, by comparison,

(Continued on page 5)

(Continued from page 4)

ison, is called the reverse channel. There's more. Certain channels carry only data. We call these control channels. They, too, have a forward and reverse frequency. This control channel is usually the first channel to look through the entire band. I'll use the terms reverse control channel and reverse voice channel to keep these terms separate from now on. One last point at the risk of losing everybody. You'll hear about dedicated control channels, paging channels, and access channels. These are not different channels but different uses of the control channel. Let's clear up the confusion by looking at call processing. We'll start out with

getting confusing? Let's go back to our friendly cell site for an example. The first channel is always the control channel for each cell. You'll have 21 control channels if you have 21 cells. Calls get setup on these. A call gets going, in other words, on the control channel first. The MTSSO then assigns a normal channel to carry the conversation. The voice channels and the control channel may handle signaling during the actual conversation. A single call, therefore, involves two kinds of forward and reverse channels. One for voice and data and one for data only. Makes it hard to



AMPS since it's the most common system and because TDMA uses the AMPS protocol to first set up calls. We'll also touch on a number of new terms along the way.

continued in June

PREPARATIONS CONTINUE FOR NEXT WRC

From The ARRL Letter
Vol. 17, No. 17
April 24, 1998

With WRC-97 behind us, preparations already are under way for the next World Radiocommunication Conference. In fact, WRC-97 was barely over before the first Conference Preparatory Meeting for WRC-99 was held last fall. While it's not entirely clear right now if the next WRC will be held in 1999 or 2000, it's still being referred to as WRC-99. The ITU Council may decide the question of when WRC-99 will be held when it meets May 20-29 in Geneva. The decision could even be deferred until the 1998 ITU Plenipotentiary Conference in Minneapolis October 12-November 6. At least for now, planning will continue on the assumption that the next conference will be held in the fall of 1999.

The FCC WRC-99 Advisory Committee held its initial meeting in February. It will meet again on April 27. FCC informal working groups have been meeting over the past few weeks.

Earlier this year, ARRL Technical Relations Manager Paul Rinaldo, W4RI, represented the League on US delegations to several ITU Radio communication Sector (ITU-R) meetings in Geneva, Switzerland. Working Party 7C met in late February. This committee is responsible for studies relating to the Earth Exploration Satellite Service that has been eyeing the 430 to 440 MHz band for use by synthetic aperture radars (SARs). These systems are capable of penetrating the upper canopy of a rain forest to monitor ecological changes.

Ken Puller, VE3PU, who represented the International Amateur Radio Union, introduced an IARU paper expressing concerns with respect to the 420 to 450 MHz band. An ARRL-authored paper also was intro-

duced by the US, expanding on the theme and reviewing the status of technical sharing studies. Working Party 8A met in mid March. This group—Amateur Radio's "home" in the ITU—is responsible for the amateur and the amateur-satellite services, among others. Representing the IARU at this session was ARRL International Affairs Vice President Larry Price, W4RA. He introduced an IARU paper detailing progress in HF data communication in the Amateur Service and setting out the characteristics of PACTOR I and II, CLOVER, and G-TOR. Several ARRL papers also were submitted by the US to update existing documentation.

Something called "fixed wireless access" (FWA—and sometimes called wireless local loop)—could become a hot topic for Amateur Radio at the next WRC. The idea is to connect user telephone or data equipment via radio instead of wirelines to an access point in the public switched telephone network. FWA proponents are looking at the suitability of more than 100 frequency bands between 27 MHz and 66 GHz—some of which involve amateur bands. A committee called Joint Rapporteur Group (JRG) will look at FWA issues. Participants include those involved in the mobile and amateur services—from WP 8A—and the fixed service. Price also represented the IARU on JRG 8A/9B.

For more information on WRC-99 preparations, see <http://www.fcc.gov/wrc-99>—thanks to Paul Rinaldo, W4RI, and Steve Mansfield, N1MZA

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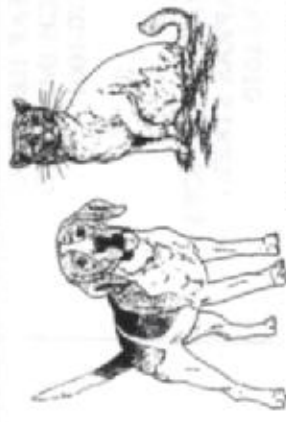
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